PRCI Project Ref: SCC-1

QUARTERLY REPORT – PUBLIC PAGE

Guidelines for the Identification of Stress Corrosion Cracking Sites and the Estimation of Re-Inspection Intervals for Stress Corrosion Cracking Direct Assessment

Date of Report: November 30, 2008

Contract No: DTPH56-06-T-000013

Prepared For: United States Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Office of Pipeline Safety

Prepared By:

Fraser King
Principal Investigator
NOVA Research & Technology Corporation
2928 16th Street, N.E.
Calgary Alberta T2E 7K7
fraser.king@shaw.ca

Mark Piazza
Team Project Manager and Technical Coordinator
Pipeline Research Council, International
1401 Wilson Blvd., Suite 1101
Arlington, VA 22209
703-387-0190
mpiazza@prci.org

For Period Ending: November 30, 2008

Technical Status

Progress in the quarter was made on a number of the scheduled tasks. In particular, progress was made on Task 1: Data Collection, Task 2: Data Analysis and Validation, and Task 4: Technology Transfer. Progress has been made in obtaining field data from pipeline operators, although there are still a number of companies that have not yet completed the task of collecting data and compiling the information for transfer into the spreadsheet survey forms that were previously provided (sent out in July 2008 as part of Task 1.2). However, a large body of data from a recent joint industry project (JIP) has been made available to the project. Critical review of the literature data previously collected has continued during the quarter (Tasks 2.1-2.4). A draft paper for NACE CORROSION/2009 was prepared during the quarter and is currently under review (Technology Transfer, Task 4). Limited progress was made on Task 3: Documentation, and there is no detailed reporting for that task presented in this report.

Task 1: Data Collection

Sub-task 1.1 Data Collection from Literature

Formal data collection from the historical literature has been completed as reported in the Q5 quarterly report (August 31, 2007). However, technical and research literature is still being monitored for new publications in this area. Typically 3-4 new publications per quarter are published on relevant topics.

Sub-task 1.2 Data Collection from Pipeline Operators

Collection of data from pipeline operators is being coordinated by PRCI and involves a single effort to collect data that will be used for a number of SCC-related projects. During the past quarter, attempts have been made to personally contact the PRCI member companies that have not yet responded to the data request. Positive responses with indications that data would be provided to support the project have been received from a number of the PRCI member companies. However, as of the end of November 2008, actual data has only been received from 4-5 companies. It is clear that a significant effort will be required to obtain these data, on behalf of both the pipeline operators and the PRCI team attempting to collect the data.

A large body of data from a recent JIP was made available to the project during the quarter. These data come from a JIP involving five major natural gas transmission companies in North America (two other companies, while not formally part of the JIP, also supplied data). The companies involved in the JIP represent most of the SCC experience on gas pipelines in North America over the past 40 years. The data set includes reports of both high-pH and near-neutral pH SCC.

Task 2: Data Analysis and Validation

Analysis of the JIP data and the comparison with the preliminary rules and guidelines developed from the R&D literature is currently in progress. However, some interesting insights into the factors that determine the location and severity of SCC are already apparent. Because of the amount of data available from the JIP study, quantitative as well as qualitative validation can be performed. These data will be combined and consolidated with the SCC data made available from PRCI member companies.

The field data collected to date has been used to perform a preliminary validation of possible rules and guidelines developed in this project based on the literature search from Task 1. Using this information, four (4) separate tables have been developed for each of the four stage of crack growth considered in the guidelines.

Table 1: Pipeline Susceptibility to SCC
Table 2: SCC Initiation
Table 3: Crack Growth to Dormancy
Table 4: Crack Growth to Failure

Once data has been obtained from a larger number of companies a blended dataset will be developed and used for the validation process.

Task 3: Documentation

No specific activity in the quarter

Task 4: Technology Transfer

A draft paper "Development of Guidelines for the Identification of SCC Sites and the Prediction of Re-inspection Intervals for SCC DA" has been prepared for presentation at CORROSION/2009, NACE International. The paper is currently under-going internal review and will be issued in the next quarter.

Issues, Problems or Challenges

Need to continue to work with pipeline companies to obtain field data for validation of the rules and guidelines.

PRCI will prepare and submit a contract modification request for adjustments to the milestone schedule, as the continued efforts for SCC data mining are requiring an extension of the tasks and activities across a greater number of milestones.

Plans for Future Activity

The following activities are anticipated for the next milestone period:

Technical Progress

The project will work on continued data analysis and development of guidelines for each module or stage of the guidelines. The focus will be on all four modules.

Progress on coordinated data collection from PRCI member companies will continue.

Meetings and Demonstrations

A Project Review will be scheduled with PHMSA and the PRCI Project Team during the next quarterly period (expected in January 2009).

Administrative Progress

A contract modification should be completed and processed following the technical meeting described above to reflect adjustments that are needed in response to the extended time required for field data collection and review for validation of the guidelines.